

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
J. PETER FASSE
FISH & RICHARDSON, P.C.
225 FRANKLIN STREET
BOSTON, MA 02110-2804

PCT

REC'D 17 MAY 2005

WFO

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 00786-607WO1		Date of mailing (day/month/year) 12 MAY 2005	
FOR FURTHER ACTION See paragraph 2 below		International filing date (day/month/year) 31 January 2005 (31.01.2005)	
International application No. PCT/US05/03158	Priority date (day/month/year) 30 January 2004 (30.01.2004)	International Patent Classification (IPC) or both national classification and IPC IPC(7): C08F 120/32, 283/10; C08L 71/02, 79/02 and US Cl.: 525/162, 187, 327. 3, 540	
Applicant THE GENERAL HOSPITAL CORPORATION			

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer James Seidleck Telephone No. 703-308-0661 <div style="text-align: right; margin-top: 10px;"> Jean Proctor Patent Paralegal Sr. </div>
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Form PCT/ISA/237 (cover sheet) (January 2004)

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US05/03158

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/03158

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>4-9, 12, 14-36</u>	YES
	Claims <u>1-3, 10-11, 13</u>	NO
Inventive step (IS)	Claims <u>4-9, 12, 14-36</u>	YES
	Claims <u>1-3, 10-11, 13</u>	NO
Industrial applicability (IA)	Claims <u>1-36</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1-3, 10-11, 13 lack novelty under PCT Article 33(2) as being anticipated by RANGER et al U.S. Patent 6,780,428.

RANGER discloses star-shape polymers having an inner core and an outer shell. The inner core comprises a hydrophobic vinyl compound such as (alkyl)acrylate and (alkyl)acrylamide and derivatives. The outer shell is obtained from the polymerization of hydrophilic vinyl compounds including a vinyl terminated polyethylene glycol, N-vinyl-2-pyrrolidone, N-isopropyl acrylamide and their related derivatives, column 5, lines 19-39. Claimed hyperbranched polymer having core/shell structure and having an active hydrogen-containing group on the outer shell segment is readable in RANGER's invention.

Claims 1-3 and 13 lack novelty under PCT Article 33(2) as being anticipated by KABANOV et al U.S. Patent 6,440,743.

KABANOV discloses star block copolymer having more than two polymer segments linked to a single center, col. 3, lines 45-60 and col. 4, lines 1-5. The star polymer can be used in Gene therapy, col. 10, lines 58-60 and col. 11, lines 34-67. The diamine-linked pluronic copolymer of formula (XVII), column 13, lines 40-55 and col. 14, lines 21-30 is readable in applicants' claims.

Claims 1-3 lack novelty under PCT Article 33(2) as being anticipated by YOUNGS et al U.S. Patent 6,288,197.

YOUNGS discloses dendrimer copolymer comprising a core segment and the dendritic branches with terminal NH₂ groups, Figure 1, col. 4, lines 24-67, col. 5, line 33 and column 15, lines 42-54.

Claims 4-9, 12, 14-36 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a hyperbranched polymer having core-shell structure wherein an inner core comprises a network of covalently bound molecular chains comprising ether linkage, the two heteroatoms are each oxygen atoms, the two oxygen atoms are spaced apart by at least four atoms.

Claims 1-36 meet the criteria set out in PCT Article 33(4), and thus has industrial applicability because the subject matter claimed can be made or used in industry.

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